REMARKS

The Office action dated April 3, 2003 and the cited references have been carefully considered.

Status of the Claims

Claims 1-25 and 39-46 are pending.

Claims 1, 2, 5-13, 16-22, 41, 42, 45, and 46 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sugiyama (JP Pub. 57-096,453, only the abstract). Claims 3, 4, 14, 15, 23-25, 39, 40, 43, and 44 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sugiyama in view of Nakamoto (U.S. Patent 6,097,138). The Applicants respectfully traverse this rejection for the reasons set forth below.

Objections to the Drawings

The drawings are objected to under 37 C.F.R. § 1.83(a). The Examiner requires that the composition for electron emitters and the gas discharge device be shown. In the conversation between the Applicants' attorney and the Examiner on June 17, 2003, the Examiner agreed that a drawing for the composition is not required. The Applicants are submitting herewith Figure 2 showing a typical gas discharge device, and Figure 3 showing schematically a non-limiting embodiment of an electron emitter of the present invention. It should be understood that the coating comprising carbon nanotubes and alkaline-earth metal compounds can cover all the surface of the filament as well. No new matter has been added.

Claim Rejection Under 35 U.S.C. §103(a)

Claims 1, 2, 5-13, 16-22, 41, 42, 45, and 46 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sugiyama (only the abstract). The Applicants respectfully traverse this rejection because Sugiyama does not teach or suggest all of the limitations of each of claims 1, 2, 5-13, 16-22, 41, 42, 45, and 46.

First, it is error to "consider[] references in less than their entireties." *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 220 U.S.P.Q. 303, 311 (Fed. Cir. 1983). The Examiner

WRONG

relies on only the abstract of Sugiyama to reject the instant claims. Thus, he considers Sugiyama in less than its entirety. Other parts of Sugiyama could have disclosed information that could be construed to teach away from some of the elements of the instant claims. *Id.* The Applicants are not provided with a full understandable reference, and thus are not provided a fair notice to respond to the Examiner's rejection. Such a full and fair notice is a fundamental requirement in any dealing between the Government and the citizens. U.S. Constitution, Amendment V.

Second, "the legal conclusion of obviousness requires that there be some suggestion, motivation, or teaching in the prior art whereby the person of ordinary skill would have selected the [elements] that the inventor selected and used them to make the new device." *C.R. Bard, Inc. v. M3 Systems, Inc.*, 48 U.S.P.Q.2d 1225, 1231 (Fed. Cir. 1998). Thus, the prior art must teach or suggest all of the limitations of each of the claims. M.P.E.P. § 2142 (8th ed., Aug. 2001).

Sugiyama discloses only carbon fibers, not carbon nanotubes. On the contrary, the instant claims recite carbon nanotubes. Carbon fibers made from organic fibers have diameters in the range from about 7 to about 10 micrometers or greater, and are polycrystalline. (See; e.g., Kirk-Othmer Encyclopedia of Chemical Technology, 4th ed., Vol. 5, pp. 1-19.) On the contrary, carbon nanotubes typically have diameters less than about 100 nm, and are monocrystalline. Their electronic properties are different. Sugiyama does not recognize or suggest the benefit of decreasing the size of the carbon fibers.

Since Sugiyama does not teach or suggest carbon nanotubes, Sugiyama does not teach or suggest all of the limitations of each of claims 1, 2, 5-13, 16-22, 41, 42, 45, and 46. Thus, Sugiyama does not render these claims obvious.

The Examiner states "[h]owever, carbon nanotubes are becoming recognized as an attractive alternate to carbon fibers as electron emitter. . . ." (Office action, p. 4, emphasis added.) This is a wrong standard under 35 U.S.C. § 103(a). "The test under 35 U.S.C. § 103(a) is whether the subject matter of the claimed invention would have been obvious at the time the invention was made . . . ." *Panduit Corp. v. Dennison Mfg. Co.*, 227 U.S.P.Q. 337, 343 (Fed. Cir. 1985) (emphasis added). The determination is not whether "carbon nanotubes are becoming recognized" now (at the time of examination), but whether people in the art would have recognized the combination of carbon nanotubes and oxygen-

containing alkaline-earth metal compounds as electron emitters at the time the invention was made. By analyzing the claimed invention at the present time, the Examiner is using hindsight to reconstruct the claimed invention using the claims as the template. Such a hindsight reconstruction is improper under 35 U.S.C. § 103(a). *ATD Corporation v. Lydall, Inc.,* 48 U.S.P.Q.2d 1321, 1329 (Fed. Cir. 1998) ("Determination of obviousness cannot be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention.")

Claims 3, 4, 14, 15, 23-25, 39, 40, 43, and 44 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sugiyama in view of Nakamoto. The Applicants respectfully traverse this rejection because there is no teaching or suggestion that a combination of carbon nanotubes and oxygen-containing alkaline-earth metal compounds be made for electron-emitters.

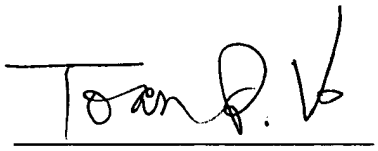
"[T]he legal conclusion of obviousness requires that there be some suggestion, motivation, or teaching in the prior art whereby the person of ordinary skill would have selected the [elements] that the inventor selected and used them to make the new device." *C.R. Bard, Inc. v. M3 Systems, Inc.*, 48 U.S.P.Q.2d 1225, 1231 (Fed. Cir. 1998).

As pointed out above, Sugiyama does not teach or suggest carbon nanotubes. Nakamoto discloses field emitters consisting of carbon nanotubes. Nowhere in a combination of Sugiyama and Nakamoto are field emitters comprising carbon nanotubes and oxygen-containing alkaline-earth compounds taught or suggested.

Since there is no teaching or suggestion, within Sugiyama and Nakamoto, of combining the elements of each of claims 3, 4, 14, 15, 23-25, 39, 40, 43, and 44, these claims are patentable over Sugiyama in view of Nakamoto.

In view of the above, it is submitted that the claims are patentable and in condition for allowance. Reconsideration of the rejection is requested. Allowance of claims at an early date is solicited.

Respectfully submitted,



Toan P. Vo, Ph.D.
Attorney for the Applicants
Registration No. 43,225
(518)387-6648

Schenectady, New York
June 18, 2003